

# The Advancing Roles of Internet of Things (IoT) in Europe's Tourism Industry: Public Relations Strategies Post Covid-19 Pandemic

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## ABSTRACT

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As a novel study topic across many academic and industrial fields, including tourism, the Internet of Things (IoT) has gained considerable footing recently. Modern tourist systems are being reshaped by the Internet of Things (IoT) revolution, which considers technological, economic, and social factors. It's changing the way visitors use and manage their interests from conventional to more tailored platforms. The coronavirus 2, which is causing the current worldwide pandemic, is the worst global public health catastrophe since the influenza pandemic of 1918. This witnessed one of the major troubles in the tourism industry, which made it difficult to operate effectively, as restrictions that were put in place to contain the spread of the virus. The role of Public relations (PR) post Covid-19 pandemic has risen and giving the industry more responsibility in ensuring that her brands and clients stay seen and relevant as the stigma surrounding the virus has made people afraid and unwilling to go back to other fun of life like touring and sightseeing. Hence, most industries continue to utilize various ways that could keep them connected to the customers and technology became one of the vital organs of these developments. The Internet of things continues to advance in terms of its implementations across the tourism industry's PR. This paper will talk about the advancing roles of the IoT in Europe's tourism industry PR. European nations remain the largest when it comes to technological adoptions. As a result, the paper is likely to furnish changes meant to assist the tourist's bookings, customer engagement, search engine optimization (SEO), amongst many others.

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## 1. Introduction

According to Global Data, Internet of Things (IoT) technology can help alleviate tourist concerns about their health and welfare while also allowing travel and tourism organizations to acquire a wealth of data for various internal and external purposes (Huff,2016). As a result, the leading data and analytics organization believes that this technology will play a larger part in post-pandemic tourism. According to Global Data's recent conceptual study, 'IoT in Travel & Tourism,' wearable technology devices at airports and other transportation terminals can help tourists practice proper social distancing and adhere to other safety and health conformity standards, thereby halting the spread of COVID-19 and ensuring tourists feel completely safe.

The technology connects devices via the Internet or a cloud service and incorporates sensors into machines to collect and disseminate data and make analysis easier, more accurate, and real-time (Bokefode et al., 2018). Not only do the gadgets communicate the information, but they also facilitate the fragile use of technology in industries, client service in consumer-focused businesses, and comprehensive analytics. The International Data Corporation (IDC) Spending guide (2019), forecasted a worldwide spending expenditure on IOT to grow 15.4% in 2019, amounting to \$745 billion, while the medium-term prediction for 2022 was nearly at \$1 trillion. It also (IDC, 2019) predicted respectively that the United States and China were the global leaders for IOT spending, whereas Europe cannot be placed in comparison with the US due to its limitation in data availability. Within Europe, Germany was topping in its spending expenditure with France and UK following respectively (Espinoza et al., 2020). Social automation by tourism industry PR, has already transformed the tourism business, and the consumer experience will be increased further by personalizing automation and optimizing industry operations (Vangelista et al., 2019). The room temperature is adjusted according to the clients' needs and is controlled for switching on and off to conserve energy and lower the hotel's total operating costs. Similarly, the flight crew may learn about the passenger's perceived stress to serve him better. Additionally, pre-, during-, and post-analysis of industry activities such as flight and room occupancy can assist in avoiding loss, resource utilization, and appropriate services.

Internally, with the application of IoT technology, operations and company costs can be optimized. Data collection from IoT sensors could enable tourism destinations to determine whether personnel are evenly distributed around a tourist attraction, thereby lowering the likelihood of certain personnel being exploited and potentially improving organizational dedication (Park, 2018). This internal value also results in an external benefit for clients, as they will obtain faster service. Additionally, by monitoring and regulating temperature, lighting, and full energy use, IoT can assist businesses in enhancing energy efficiency and combating climate change.

With the wealth of data being produced by embedded sensors, PR professionals have the opportunity to develop better data driven campaigns (Brooke, 2017). As these can create a targeted audience profiling, helping to adapt their behavior to put their customer experience first. Post Covid-19, the introduction of IOT has also helped the PR of the tourism industry to focus more into digital strategies (Revfine, 2022). This has led to the use of AI, bots programming and machine learning to improve search engine optimization for voice search and beyond as opposed to the traditional approaches.

## **2. Methods**

The Internet of Things is an emerging that has the potential to enhance Smart Tourism. The Internet of Things was coined in 1999 by Kevin Ashton (MIT) to connect gadgets at any time and from any location (Want et al., 2015). To put it another way, the Internet of Things (IoT) is a network of physical items that incorporates the necessary technology to allow them to communicate and perceive or interact with their internal states or the external environment, or both, together (Gartner, 2013). Physical items and people connect in real-time via the Internet of Things, making the connection between the physical and digital worlds (Gavalas et al. 2014), Across light of estimates showing that the Internet of Things (IoT) would include over 75 billion networked devices by 2025, evolution is expected in a wide range of industries, such as manufacturing and smart grids as well as protection, medical, education, and tourism.

For example, in the use of IoT in tourism, smart technological environments can be created that link their physical and digital infrastructures together. Systems will be able to identify visitors' context in a pervasive yet non-intrusive way and attend to their requirements as a result. Considering this, Nitti et al. (2017) suggest an IoT architecture for a sustainable tourism app that utilizes sensors in Points of Interest to provide users with location-based support (Gretzel et al., 2015). For this scenario, travellers visiting Cagliari, Sardinia, Italy, have limited time to view the city's points of interest, so they utilize a smartphone app to plan their itinerary. Choosing the wrong mode of transportation or encountering long lines due to these authors' approaches can cause delays when visiting a site. Using the sensors mentioned earlier in Points of Interest entrances, we can track how long people are waiting in line and the exact time and date throughout the day. Tourists can get the optimal path to see all the sights by using this estimate and the time it takes to go to each one. Furthermore, their study contributes to the definition of important needs for an IoT platform in a Smart City setting, namely security requirements, adaptability specifications, and data requirements.

Use of wearable bracelets as part of a tourist system (Sun et al.2016). A case study of Tre Sight, an IoT and big data analytics-integrated recommendation system for Smart Development and tourism cultural identity in Trento, Italy, is described in detail. Data is collected dynamically from real-time weather sensors, wearable bracelets, and hot spots that provide information on the venues' availability, how popular they are, and what hours they are open and shut. Mobile apps will "connect" with the bracelet and use all of the dynamic data to provide ideas to tourists, run promotional campaigns, and provide information about nearby Points of Interest. Smart Tourism management is made possible by using this system, which considers 3D topography differences. For example, the described system places wearables and sink networks in a recreational area to collect data from visitors' wearable devices and provide various services like environmental engagement and physiological data identification.

Social distancing is also a useful COVID-19 approach in the hotel industry. Using AI and robots in high-contact settings at hotels was proposed to keep hotel staff and visitors safe (Jiang, & Wen,2020). Many innovative technologies have been recognized as possible replacements for face-to-face customer service, such as robot customer service representatives, facial scan check-ins, robot deliveries, robot guest services assistance, voice guest control, etc. After then, the effectiveness of the robot-based service is assessed in a real hotel (Chiang, & Trimi, 2020). Robots serve 250 tourists, and their feedback is used to create the show. According to the findings, clients place a high value on confidence and dependability. Furthermore, the robots' responsiveness failed the test, but this was a low-priority goal for the clients. The hotel robots of the future will be strengthened by the 5G network, which might enable remote control and decision-making help, while AI and HRC technologies will be able to offer better responses to users. According to a report on '*IOT in Travel and Tourism*' by Global Data (2021), the use of wearable devices at airports and other terminal transports during touring, can allow travelers to practice correct social distancing procedures and also help them in complying to other health and safety guidelines in accordance to Covid-19 protocols. This allows them to feel healthy and safe while also having fun.

Tourism industry can help better promote its embrace of these new technological advancement by promoting its public relations strategies. Its PR industry must strategically iterate on the benefits associated with the use of IOT devices as the narratives of its cons pre covid-19 reduced its acceptability by consumers. But with the advent of restrictions and social distancing post covid-19, the use of IOT devices is increasingly in acceptance. Tourism PR

industries must follow re-establishment of trust in IOT devices by explain the positives of connected devices and how the reality of covid-19 can be better tackled through its use.

### 3. Results and Discussion

The epidemic is drawing attention to robotics on a greater scale and across industries. Tourist experience researchers could take this chance to adopt robotics research that improves visitor experiences while also protecting tourists and travellers from the pandemic (Zeng et al. 2020). Adding human workers to complement robots can help tourism and hospitality businesses overcome the negative effects of societal limitations (Seyitolu & Ivanov,2020).

Three service robot models have been outlined in the tourism industry: robotic, human-based, and mixed. In the post-pandemic period, various models' requirements, advantages, limitations, and potential target markets are examined. According to the findings of this study, the first step for hospitality organizations is to evaluate the expectations of tourists, analyze the data, and establish how they can differentiate and position themselves in a competitive industry. This analysis may employ several different approaches, such as a holistic approach that includes many methods such as resource-based views and value chain, stakeholder, and PESTEL analyses. To begin, researchers in the tourism industry looked at how tourists felt about humanoid robots (Christou et al. 2020). According to the findings, humanoid robots are preferred above other sorts of machines. Humanoid robots, similar to service and partner robots, could lead to additional experiential value in the tourism business. The use of robots in human-centred applications can also lead to negative feelings such as irritation, despair, and disappointment, which will need to be addressed going forward.

The usage of robots in a smart coffee shop is becoming increasingly popular in the catering business because of their practicality and creativeness (Sung et al. 2020). Robotic service is an important technique for corporate management during and after the pandemic when customers demand frictionless service. The service robot acts as a barrier between customers and personnel when it comes to the catering industry, similar to medical robots. In Korea, robot-served restaurants were the subject of a consumer satisfaction survey (Cha,2020). The primary impactors on the stimulated customer's creativity and ingenuity are conveniences, attractiveness, countercultural appeal, and novelty. These issues should be taken into account by restaurant marketers because contactless service is becoming progressively important in the context of COVID-19.

Additionally, sophisticated occupancy sensors will enable hotels to send menu updates to guests' cellphones at the most optimum times when they are in their rooms. These messages may also include personalized recommendations based on previous purchases. Indeed, several home food delivery applications currently provide a similar experience, notifying frequent users of their desired ordering at specific times.

The availability of big data concerning tourists' preferences and opinions can help tourism's PR professionals, in being more specific with targeted content. With the use of big data from IOT devices, the PR industry is plugged into a massive access to customers data which can be used to her advantage (Brooke, 2017). Targeted content via the creation of compelling messages that will address consumer specific interests like trendy vacation sights, local attractions, hotel reservations and bookings, specific hotel facilities etc. which will help boost its client's messages and help connect them to better connected customers.

#### 4. Conclusion

For the last few years, a diverse variety of IoT applications have been embraced. In the tourism industry, the Internet of Things (IoT) is becoming the norm. The Internet of Things (IoT) will make life easier in various ways, from automating hotel room check-ins and check-outs to helping tourists find their way to their final destination. IoT is necessary since it provides numerous benefits such as reduced costs, enhanced production, improved operational efficiency, and more delighted tourists. The tourism industry having embraced this technology will reap more personalization, further automation, and greater customer experience, via its rebranding of its PR industry. The rebranding within the PR due to the introduction of IOT innovations will witness transformation of its digital strategies leading to better communication mediums, more specific targeted contents that will help better sell the tourism industry and help re-establish trust from its customers.

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